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EXAMINER	
STEVENS, THOMAS H	

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 07/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/858,235	SINCLAIR, ANDREW	
	Examiner	Art Unit	
	Thomas H. Stevens	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 May 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/858,235.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-51 were examined.

Section I: Response to Applicant's Arguments (First Office Action)

Claim Objections

2. Applicant is thanked for addressing this issue. Objections are withdrawn.

35 U.S.C 112/102(b)/103(a)

3. Applicant is thanked for addressing this issue. Rejections are withdrawn; however, examiner has discovered new prior in view of the amended claims.

Section II: Final Rejection (2nd Office Action)

Drawings

Claim Objections

4. Dependent apparatus claim 47 is linked to independent method claims 1, 9 and 18.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfill (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16))ed (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16)) the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-51 are rejected under 35 U.S.C. 102(e) as being anticipated by Brown (U.S. Patent 6,311,095 (2001)). Brown discloses a system and method for simulation and modeling of biopharmaceutical batch process manufacturing facilities (abstract).

Claim 1. A method of simulating a industrial process (title) comprising the steps of: storing model data indicative of a plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) involving a number of items of equipment to be used in an industrial process (title) to be simulated: initiating a first simulated batch for simulated processing (title); generating scheduling (abstract, last sentence) data for scheduling (abstract, last sentence) the initiation of simulated batches after the initiation of said first simulated batch by when simulated processing of a latest initiated batch (column 2, lines 45-48) batch is initiated batch (column 2, lines 45-48); identifying items of equipment liable to be involved in simulated processing of a next batch to be initiated batch (column 2, lines 45-48) after said latest initiated batch (column 2, lines 45-48) batch; utilizing said stored model data to determine for each item of said identified items of equipment a minimum possible simulated processing time required for simulated processing of said latest initiated batch (column 2, lines 45-48) batch; determining for said identified items of equipment which are currently in use for processing batches currently being processed, the greatest time of use of previously simulated in processing batches using said items of equipment; and generating scheduling (abstract, last sentence) data for the next batch to be initiated batch (column 2, lines 45-48) after the latest initiated batch (column 2, lines 45-48) batch to cause the time between the initiation of said latest initiated batch

(column 2, lines 45-48) batch and said next batch with said simulation to be equal to the greater of the maximum (designer choice with regard to process time; column13, lines 15-29) of said minimum process times for said items of equipment involved in simulated processing of said next batch and said greatest time of use of said identified items of equipment currently in use and generating output (column 11, lines 13-21) data indicative of said simulation of an industrial process (title) utilizing said stored model data and said generated scheduling (abstract, last sentence) data.

Claim 2. A method in accordance with claim 1, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence) wherein said determination of the greatest time of use of an item of equipment utilized in processing comprises the steps of: storing in association with each item of equipment to be simulated data indicative of the time of use of said item of equipment for a batch previously processed by said item of equipment; and determining as the greatest time (designer choice with regard to process time; column13, lines 15-29) of use the greatest time of use of said stored times of use.

Claim 3. A method in accordance with claim 1, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence) wherein said determining of the greatest time of use of an item of equipment further comprises for each of the said items of equipment the steps of: determining whether an item of equipment is in use; and if an item of equipment is in use determining the total time the item of equipment

has been in use for a current batch; and if an item of equipment is no longer in use storing said total time (designer choice with regard to process time; column13, lines 15-29) in use as said time in use for said equipment.

Claim 4. A method in accordance with claim 3, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence) wherein each of said items of equipment is associated with a number of processes wherein said determination of whether an item of equipment is in use comprises determining whether any of said processes associated with said item of equipment is currently being simulated (title).

Claim 5. A method in accordance with claim 1, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence) wherein said determining of a minimum possible processing time of an initiated batch (column 2, lines 45-48) batch comprises the step of storing in association with each batch to be initiated batch (column 2, lines 45-48) data indicative of the greatest of said minimum possible processing times; and said generation step comprises utilizing said data to generate scheduling (abstract, last sentence) data.

Claim 6. A method in accordance with claim 1, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence) wherein said determination of a minimum possible processing time comprises the steps of: associating with a batch

to be initiated batch (column 2, lines 45-48) data to be indicative of the items of equipment to be utilized in simulated processing of said batch; and determining said minimum possible processing times (designer choice with regard to process time; column13, lines 15-29) for each item of equipment associated with said batch.

Claim 7. A method in accordance with claim 1, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence) wherein each of the said items of equipment is associated with a number of processes, each of said process being associated with data identifying one or more completion conditions for that process, least some of said processes being associated with data identifying one or more completion conditions including the lapse of specified time period in the simulation of a process, wherein said determination the sum of said specified time periods (column13, lines 15-29) for said processes of said items of equipment.

Claim 8. A method in accordance with claim 7, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence) wherein each of the said storage step further comprises associating with at least some of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) involving said items of equipment, rate data identifying the respective associated process as utilizing a utility at a rate and said generation of output (column 11, lines 13-21) data comprises for each step in a simulation the steps of: determining whether any process of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) to be simulated is

associated with rate data; determining the minimum time increment step size (equate step size to scale calculations; column 2, lines 45-50) required to complete any of the process currently being simulated ; and selecting as a time increment step size (equate step size to scale calculations; column 2, lines 45-50) for generating output (column 11, lines 13-21) data a default time increment step size (equate step size to scale calculations; column 2, lines 45-50), if at least one process associated with rate data is to be simulated and said default time increment step size (equate step size to scale calculations; column 2, lines 45-50) is smaller than said determined minimum time (designer choice with regard to process time; column13, lines 15-29) increment step size (equate step size to scale calculations; column 2, lines 45-50), and selecting as said time increment step size (equate step size to scale calculations; column 2, lines 45-50) said determined minimum time increment step size (equate step size to scale calculations; column 2, lines 45-50) if no process to be simulated is associated with rate data or said default time increment step size (equate step size to scale calculations; column 2, lines 45-50) is greater than said determined minimum time (designer choice with regard to process time; column13, lines 15-29) increment step size (equate step size to scale calculations; column 2, lines 45-50).

Claim 9. A method of simulating an industrial process (title) comprising the steps of: storing model data indicative of a plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) involving a number of items of equipment to be used in an industrial process (title) to be simulated; determining a time increment step size (equate step size

to scale calculations; column 2, lines 45-50) to be used with said model data; and generating output (column 11, lines 13-21) data indicative of a step within a simulation of an industrial process (title) utilizing said stored model data and said determined time increment step size (equate step size to scale calculations; column 2, lines 45-50), characterized in that said storage step comprises the step of storing rate data in relation to at least some of said processes, and that said determination step comprises for each step in a simulation; the steps of: determining whether any process of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) to be simulated is associated with rate data identifying the respective associated process as utilizing a utility at a rate; determining the minimum time (designer choice with regard to process time; column13, lines 15-29) increment step size (equate step size to scale calculations; column 2, lines 45-50) required to complete any of the processes currently being simulated; and selecting as a time increment step size (equate step size to scale calculations; column 2, lines 45-50) for generating output (column 11, lines 13-21) data a default time increment step size (equate step size to scale calculations; column 2, lines 45-50), if at least one process associated with rate data is to be simulated and said default time increment step size (equate step size to scale calculations; column 2, lines 45-50) is smaller than said determined minimum time (designer choice with regard to process time; column13, lines 15-29) increment step size (equate step size to scale calculations; column 2, lines 45-50), and selecting as said time increment step size (equate step size to scale calculations; column 2, lines 45-50) said determined minimum time (designer choice with regard to process time; column13, lines 15-29) increment

step size (equate step size to scale calculations; column 2, lines 45-50) if no process to be simulated is associated with rate data or said default time increment step size (equate step size to scale calculations; column 2, lines 45-50) is greater than said determined minimum time (designer choice with regard to process time; column13, lines 15-29) increment step size (equate step size to scale calculations; column 2, lines 45-50).

Claim 10. A method in accordance with claim 8, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence; column13, lines 15-29) wherein said storage step further comprises associating with said at least some of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively), utility type data, and said generation of output (column 11, lines 13-21) data comprises for steps in a simulation generating output (column 11, lines 13-21) data associated with items of utility type data utilizing rate data associated with a process being simulated and said determined time increment step size (equate step size to scale calculations; column 2, lines 45-50; column13, lines 15-29).

Claim 11. A method in accordance with claim 10, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence; column13, lines 15-29) wherein said generation of output (column 11, lines 13-21) data comprises for steps in a simulation determination of output (column 11, lines 13-21) data representative of instantaneous demand for a utility corresponding to an item of utility type data utilizing

determined sums of rate data associated with said utility type data for processes being simulated.

Claim 12. A method in accordance with claim 10, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence; column13, lines 15-29) wherein said generation of output (column 11, lines 13-21) data for steps within a simulation comprises storing in association with items of utility data, quantity data indicative of a current quantity of a utility within a simulation wherein said quantity data is determined utilizing rate data associated with processes being simulated and said determined time increment step size (equate step size (equate step size to scale calculations; column 2, lines 45-50) to scale calculations; column 2, lines 45-50).

Claim 13. A method in accordance with claim 12, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence; column13, lines 15-29) wherein said quantity data for a step in a simulation is determined by incrementing or decrementing quantity data associated with utility type data for the previous step in a simulation by the product of said determined time increment step size (equate step size to scale calculations; column 2, lines 45-50) and the sum of rate data associated with said utility data and processes being simulated.

Claim 14. A method in accordance with claim 13, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence; column13, lines 15-29)

wherein said storage step further comprises storing in association with said items of utility type data, minimum quantity data and generation rate data, wherein the determination of quantity data associated with an item of utility type data for a step within a simulation comprises the step of incrementing or decrementing quantity data for the previous step in a simulation by the product of said generation rate data and said determined time increment step size (equate step size to scale calculations; column 2, lines 45-50) if said quantity data is less than said minimum quantity data associated with said utility type.

Claim 15. A method in accordance with claim 14, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence; column13, lines 15-29) wherein said storage step further comprises storing in association with said items of utility type data, maximum (designer choice with regard to process time; column13, lines 15-29) quantity data wherein the determination of quantity data associated with an item of utility type data for a step within a simulation comprises the step of incrementing or decrementing quantity data for the previous step in a simulation by the product of said generation rate data and said determined time increment step size (equate step size to scale calculations; column 2, lines 45-50) only when said quantity data associated with said utility type does not exceed said maximum (designer choice with regard to process time; column13, lines 15-29) quantity data associated with said utility type.

Claim 16. A method in accordance with claim 10, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence; column13, lines 15-29) wherein said generated output (column 11, lines 13-21) data associated with utility type data comprises data indicative of the simulated availability of utilities or waste processing capacity (column 11, lines 5-7).

Claim 17. A method in accordance with claim 10, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence; column13, lines 15-29) wherein said storage step comprises storing in association with at least some of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) data indicative of one or more continuation conditions, and said generation of output (column 11, lines 13-21) data comprises for each step in a simulation, the steps of: determining which of said plurality of processes are to be simulated in said step of said simulation; determining for processes to be simulated associated with data indicative of one or more continuation conditions whether output (column 11, lines 13-21) data generated for the previous step in said simulation fulfills (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16) the one or more continuation conditions defined by said data; and if at least one continuation condition for a process being simulated is not fulfilled (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16) simulating a delay in the continued processing of said process.

Claim 18. A method of simulating and industrial process (title) comprising the steps of: storing model data indicative of a plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) involving a number of items of equipment to be used in an industrial process (title) to be simulated; and generating output (column 11, lines 13-21) data indicative of a simulation of an industrial process (title) utilizing said stored model data, characterized in that said storage step comprises storing, data indicative of one or more continuation conditions in association with each of said processes, and said generation of output (column 11, lines 13-21) data comprises for each step in a simulation, the steps of: determining which of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) are to be simulated in said step of said simulation; determining for the processes to be simulated whether output (column 11, lines 13-21) data generated for the previous step in said simulation fulfills (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16)) the one or more continuation conditions defined by the stored data associated with said processes being simulated; and if at least one continuation condition with a process being simulated is not fulfill (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16) by said generated output (column 11, lines 13-21) data simulating a delay in the continued processing of said process.

Claim 19. A method in accordance with claim 17, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence; column13, lines 15-29) wherein said data indicative of one or more continuation conditions associated with a

process comprises data defining an equation which quantity data associated with utility type data is required to fulfill (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16).

Claim 20. A method in accordance with claim 17, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence; column13, lines 15-29) wherein said storage step comprises storing data in association with each of said plurality of processes indicative of the next processes to be simulated following the completion of each said process wherein said determination of which of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) are to be simulated comprises the steps of: determining for each process simulated in the previous step of a simulation whether the one or more continuation conditions associated with each process being simulated have been fulfilled (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16); and determining as processes to be simulated: processes being simulated for which not all of the continuation conditions have been fulfilled (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16) and processes identified by said stored data as next processes to be simulated which are associated with simulated processes for which all of completion conditions associated with those processes have been fulfill (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16).

Claim 21. A method of performing an industrial process (title) comprising the steps of: simulating an industrial process (title) in accordance with any one of claims 1, 9 or 18 to determine apparatus required to perform a process; providing apparatus corresponding to said items of equipment simulated; and utilizing said apparatus to perform said industrial process (title) simulated.

Claim 22. An apparatus for generating a simulation of an industrial process (title) comprising: storage means for storing model data indicative of a plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) involving a number of items of equipment to be used in an industrial process (title) to be simulated; determination means for determining scheduling (abstract, last sentence) data for initiating batches against which said processes are to be simulated; an equipment identifier operable to identify items of equipment liable to e involved in simulated processing of a next batch to be initiated batch (column 2, lines 45-48) after a latest initiated batch (column 2, lines 45-48) batch; a minimum cycle (column 5, lines 45-51) time determination unit operable to determine for items of equipment identified by said equipment identifier a minimum possible simulated time required by each identified item of equipment for processing said latest initiated batch (column 2, lines 45-48) batch; a current cycle (column 5, lines 45-51) time determination unit operable to determine for each item of equipment identified by said equipment identifier, the greatest time of use for processing previously initiated batch (column 2, lines 45-48) batches; a scheduling (abstract, last sentence) unit operable to generate scheduling (abstract, last sentence) data for scheduling

(abstract, last sentence) the initiation of a next batch to be initiated batch (column 2, lines 45-48) after the initiation of a latest initiated batch (column 2, lines 45-48) batch, said scheduling (abstract, last sentence) unit being arranged to cause the time between the initiation of a next batch to be initiated batch (column 2, lines 45-48) after a latest initiated batch (column 2, lines 45-48) batch to be equal to the greater of the maximum (designer choice with regard to process time; column13, lines 15-29) of the minimum processing times said minimum cycle (column 5, lines 45-51) time determination unit and the greatest time in use determined by said current cycle (column 5, lines 45-51) time determination unit for items of equipment identified as being liable to process said batch to be scheduled; and generation means for generating output (column 11, lines 13-21) data indicative of a simulation of an industrial process (title) utilizing stored model data and scheduling (abstract, last sentence) data generated by said scheduling (abstract, last sentence) unit.

Claim 23. An apparatus in accordance with claim 22,(title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48) wherein said current cycle (column 5, lines 45-51) time determination unit comprises: means for storing in association with each item of equipment to be simulated data indicative of the time of use of said item of equipment for a batch previously processed by said item of equipment, said current cycle (column 5, lines 45-51) time determination unit being arranged to determine as the greatest time of use the greatest time of use of said stored times of use stored in said means for storing.

Claim 24. An apparatus in accordance with claim 22, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48) wherein said current cycle (column 5, lines 45-51) time determination unit is arranged to determine for each of the said items of equipment identified by said equipment identifier whether an item of equipment is in use; and if an item of equipment is in use to determine the total time the item of equipment has been in use for a current batch; and if an item of equipment is no longer in use to store said total time (designer choice with regard to process time; column13, lines 15-29) in use as said time in use for said equipment.

Claim 25. An apparatus in accordance with claim 24, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48) wherein said storage means is arrange to store model data associating each of said items of equipment with a number of processes wherein said current cycle (column 5, lines 45-51) time determination unit being arranged to determine whether any of said processes associated with an item of equipment is currently being simulated to determine whether an item of equipment is in use.

Claim 26. An apparatus in accordance with claim 22, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48) wherein said minimum cycle (column 5, lines 45-51) time determination unit

comprises means for storing in association with each batch to be initiated batch (column 2, lines 45-48) data indicative of the greatest of said minimum possible processing times, said minimum cycle (column 5, lines 45-51) time determination unit being arranged to utilize said data to generate scheduling (abstract, last sentence) data.

Claim 27. An apparatus in accordance with claim 22, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48) wherein said minimum cycle (column 5, lines 45-51) time determination unit comprises means for associating with a batch to be initiated batch (column 2, lines 45-48) data indicative of the items of equipment to be utilized in simulation processing of said batch, said minimum cycle (column 5, lines 45-51) time determination unit being arranged to utilize said data associated with said batch.

Claim 28. An apparatus in accordance with claim 27, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48) wherein said storage means is arranged to associate said items of equipment with data indicative of a number of processes and data identifying one or more completion conditions for each of said processes, at least some of said processes being associated with data identifying one or more completion conditions including the lapse of specified time period in the simulation of a process, wherein said minimum cycle (column 5, lines 45-51) time determination unit is arranged to determine the sum of said

specified time periods identified as completion conditions for processes associated with said items of equipment.

Claim 29. An apparatus in accordance with claim 28, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48) wherein said storage means is further arranged to associate with at least some of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) (columns 5-6 , lines58-67 and 1-39, respectively) , rate data and wherein said generation means further comprises: means for determining whether any process of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) (columns 5-6 , lines58-67 and 1-39, respectively) to be simulated is associated with rate data identifying the respective associated process as utilizing a utility at a rate: means for determining the minimum time (designer choice with regard to process time; column13, lines 15-29) increment step size (equate step size to scale calculations; column 2, lines 45-50) required to complete any of the processes currently being simulated; and selection means for selecting as a time increment step size (equate step size to scale calculations; column 2, lines 45-50) for generating output (column 11, lines 13-21) data a default time increment step size (equate step size to scale calculations; column 2, lines 45-50), if a least one process associated with rate data is to be simulated and said default time increment step size (equate step size to scale calculations; column 2, lines 45-50) is smaller than said determined minimum time (designer choice with regard to process time; column13, lines 15-29) increment step size (equate step size to scale

calculations; column 2, lines 45-50), and selecting as said time increment step size (equate step size to scale calculations; column 2, lines 45-50) said determined minimum time (designer choice with regard to process time; column13, lines 15-29) increment step size (equate step size to scale calculations; column 2, lines 45-50) if no process to be simulate is associated with rate data or said default time increment step size (equate step size to scale calculations; column 2, lines 45-50) is greater than said determined minimum time (designer choice with regard to process time; column13, lines 15-29) increment step size (equate step size to scale calculations; column 2, lines 45-50).

Claim 30. An apparatus for generating a simulation of an industrial process (title) comprising: storage means for storing model data indicative of a plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) (columns 5-6 , lines58-67 and 1-39, respectively) involving a number of items of equipment to be used in an industrial process (title) to be simulated; means for determining a time increment step size (equate step size to scale calculations; column 2, lines 45-50) to be used with said model data; and generation means for generating output (column 11, lines 13-21) data indicative of a step within a simulation of an industrial process (title) utilizing said stored model data and a determined time increment step size (equate step size to scale calculations; column 2, lines 45-50), characterized in that said storage means is arranged to store rate data (columns 15-16, lines 48-67 and lines 1-5, respectively) in relation to at least some of said processes, and that means for determining a time increment step size (equate step size to scale calculations; column 2, lines 45-50)

comprises: means for determining whether any process of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) to be simulated is associated with rate data identifying the respective associated process as utilizing a utility at a rate; means for determining the minimum time (designer choice with regard to process time; column13, lines 15-29) increment step size (equate step size to scale calculations; column 2, lines 45-50) required to complete any of the processes currently being simulated; and selection means for selecting as a time increment step size (equate step size to scale calculations; column 2, lines 45-50) for generating output (column 11, lines 13-21) data a default time increment step size (equate step size to scale calculations; column 2, lines 45-50), if at least one process associated with rate data is to be simulated and said default time increment step size (equate step size to scale calculations; column 2, lines 45-50) is smaller than said determined minimum time (designer choice with regard to process time; column13, lines 15-29) increment step size (equate step size to scale calculations; column 2, lines 45-50), and selecting as said time increment step size (equate step size to scale calculations; column 2, lines 45-50) said determined minimum time (designer choice with regard to process time; column13, lines 15-29) increment step size (equate step size to scale calculations; column 2, lines 45-50) if no process to be simulated is associated with rate data or said default time increment step size (equate step size to scale calculations; column 2, lines 45-50) is greater than said determined minimum time (designer choice with regard to process time; column13, lines 15-29) increment step size (equate step size to scale calculations; column 2, lines 45-50).

Claim 31. An apparatus in accordance with claim 29, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48) wherein said storage means is further arranged to associate with said at least some of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively), utility type data, and said generation means is arranged to output (column 11, lines 13-21) data associated with items of utility type data utilizing rate data associated with a process being simulated and said determined time increment step size (equate step size to scale calculations; column 2, lines 45-50).

Claim 32. An apparatus in accordance with claim 31, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48; column 11, lines 13-21; equate step size to scale calculations; column 2, lines 45-50) wherein said generation means is arranged to output (column 11, lines 13-21) data representative of instantaneous demand for a utility corresponding to an item of utility type data utilizing determined sums of rate data associated with said utility type data for processes being simulated.

Claim 33. An apparatus in accordance with claim 31, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48; column 11, lines 13-21; equate step size to scale calculations; column 2, lines 45-50) wherein said storage means is arranged to store in association with items of

utility data, quantity data indicative of a current quantity of a utility within a simulation, and wherein said generation means is arranged to output (column 11, lines 13-21) quantity data is determined utilizing rate data associated with processes being simulated and said determined time (designer choice with regard to process time; column13, lines 15-29) increment step size (equate step size to scale calculations; column 2, lines 45-50; column13, lines 15-29).

Claim 34. An apparatus in accordance with claim 31, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48; column 11, lines 13-21; equate step size to scale calculations; column 2, lines 45-50) wherein said generation means is arranged to determine quantity data for a step in a simulation by incrementing or decrementing quantity data associated with utility type data for the previous step in a simulation by the product of said determined time increment step size (equate step size to scale calculations; column 2, lines 45-50) and the sum of rate data associated with said utility data and processes being simulated.

Claim 35. An apparatus in accordance with claim 34, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48; column 11, lines 13-21; equate step size to scale calculations; column 2, lines 45-50) wherein said storage means is further arranged to store in association with said items of utility type data, minimum quantity data and generation rate data, wherein said generation means is arranged to output (column 11, lines 13-21) quantity data

associated with an item of utility type data for a step within a simulation by incrementing or decrementing quantity data for the previous step in a simulation by the product of said generation rate data and said determined time increment step size (equate step size to scale calculations; column 2, lines 45-50) if said quantity data is less than said minimum quantity data associated with said utility type.

Claim 36. An apparatus in accordance with claim 35, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48; column 11, lines 13-21; equate step size to scale calculations; column 2, lines 45-50)wherein said storage means is further arranged to store in association with said items of utility type data, maximum (designer choice with regard to process time; column13, lines 15-29) quantity data wherein said generation means is arranged to output (column 11, lines 13-21) quantity data associated with an item of utility type data for a step within a simulation determined by incrementing or decrementing quantity data associated with said utility type for the previous step in a simulation by the product of said generation rate data and said determining time increment step size (equate step size to scale calculations; column 2, lines 45-50) only when said quantity data associated with said utility type does not exceed said maximum (designer choice with regard to process time; column13, lines 15-29) quantity data associated with said utility type.

Claim 37. An apparatus in accordance with claim 31, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48; column 11, lines 13-21; equate step size to scale calculations; column 2, lines 45-50)wherein said storage means is arranged to store in association with at least some of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) (columns 5-6 , lines58-67 and 1-39, respectively) , data indicative of one or more continuation conditions and said generation means comprises: means for determining which of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) (columns 5-6 , lines58-67 and 1-39, respectively) are to be simulated in said step of said simulation; and means for determining for processes to be simulated associated with data indicative of one or more continuation conditions whether output (column 11, lines 13-21) data generated for the previous step in said simulation fulfills (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16)) the one or more continuation conditions defined by said data; and if at least one continuation condition associated with a process being simulated is not fulfilled (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16) by said generated output (column 11, lines 13-21) data simulating delay in a continued processing of said process.

Claim 38. An apparatus for simulating an industrial process (title) comprising: storage means for storing model data indicative of a plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) involving a number of items of equipment to be used in an industrial process (title) to be simulated, and generation means for generating output

(column 11, lines 13-21) data indicative of a simulation of an industrial process (title) utilizing said stored model data, characterized in that said storage means is arranged to store data indicative of one or more continuation conditions in association with each of said processes, and said generation means comprises: means for determining which of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) are to be simulated in said step of said simulation; means for determining for the processes to be simulated whether output (column 11, lines 13-21) data generated for the previous step in said simulation fulfils the one or more continuation conditions (columns 5-6 , lines 58-67 and 1-39, respectively) defined by said the stored data associated (columns 15-16, lines 48-67 and lines 1-5, respectively) with said processes being simulated; and if at least one continuation condition associated with a process being simulated is not fulfilled (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16) simulating a delay in the continued processing of said process .

Claim 39. An apparatus in accordance with claim 37, (title; columns 5-6 , lines 58-67 and 1-39, respectively; columns 15-16, lines 48-67 and lines 1-5, respectively) wherein said storage means is arranged to store data indicative of a continuation condition comprises data defining an equation which quantity data associated with utility type data is to fulfill (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16)).

Claim 40. An apparatus in accordance with claim 37, (title; columns 5-6 , lines 58-67 and 1-39, respectively; columns 15-16, lines 48-67 and lines 1-5, respectively) wherein said storage means is adapted to store data in association with each of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) indicative of the next processes to be simulated following the completion of each said process wherein said means for determining of which of said plurality of processes (columns 5-6 , lines 58-67 and 1-39, respectively) are to be simulated comprises the steps of: means for determining for each process simulated in the previous step of a simulation whether the one or more continuation conditions associated with each said process being simulated have been fulfilled (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16; columns 5-6, lines 45-67,1-39); and means for determining as processes to be simulated processes being simulated for which said not all of continuation conditions have let beep fulfilled (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16) and said the processes identified by data in said storage means (column 15, lines 55-61) as next processes to be simulated (columns 5-6, lines 45-67,1-39) which are associated by said data with processes for which said completion conditions have been fulfilled (a cycle is delayed until the previous cycle is completed; column 6, lines 9-16).

Claim 41. A method in accordance with claim 1, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence) wherein said

determination of scheduling (abstract, last sentence) data further comprises the steps of: when a batch is being initiated batch (column 2, lines 45-48) determining time remaining in a current shift and re-scheduling (abstract, last sentence) said batch if said time remaining is less than an estimated time required for processing said batch.

Claim 42. A method in accordance with claim 41, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence) wherein said re-scheduling (abstract, last sentence) of said batch comprises re-scheduling (abstract, last sentence) said batch for the next shift if said time remaining is less than a minimum processing time (designer choice with regard to process time; column13, lines 15-29) for said batch.

Claim 43. A method in accordance with claim 41, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 2, lines 45-48; abstract, last sentence) wherein said estimated time required is determined by calculating the sum of the greater of the greatest time of use of items of equipment utilized in processing said batches and minimum possible processing times for processing said batch in accordance with said model data for said items of equipment.

Claim 44. An apparatus in accordance with claim 22, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48) wherein said determination means for determining scheduling (abstract, last

sentence) data is operable when a batch is being initiated batch (column 2, lines 45-48) to determine time remaining in a current shift and re-schedule said batch if said time remaining is less than an estimated time required for processing said batch.

Claim 45. An apparatus in accordance with claim 44, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48) wherein said re-scheduling (abstract, last sentence) of said batch comprises re-scheduling (abstract, last sentence) said batch for the next shift if said time remaining is less than a minimum processing time for said batch.

Claim 46. An apparatus in accordance with claim 44, (title; columns 5-6 , lines 58-67 and 1-39, respectively; column 5, lines 45-51; abstract, last sentence; column 2, lines 45-48) wherein said estimated time is determined by calculating the sum of the greater of the greatest time of use of items of equipment utilized in processing said batches and minimum possible processing times (designer choice with regard to process time; column13, lines 15-29) for processing said batch in accordance with said model data for said items of equipment.

Claim 47. A recording medium, storing computer (columns 15-16, lines 48-67 and lines 1-5, respectively) implementable processor steps for performing a method in accordance with any one of claims 1, 9 or 18.

Claim 48. A recording medium storing computer implementable processor step for generating within a programmable computer an apparatus (columns 15-16, lines 48-67 and lines 1-5, respectively) in accordance with any one of claims 22, 30 or 38.

Claim 49. A recording medium in accordance with claim 47(columns 15-16, lines 48-67 and lines 1-5, respectively) comprising a computer disc (column 15, lines 55-61).

Claim 50. A recording medium in accordance with claim 47, (columns 15-16, lines 48-67 and lines 1-5, respectively) comprising an electric signal transferred via the Internet (column 16, lines 6-15).

Claim 51. A computer disc in accordance with claim 49, (columns 15-16, lines 48-67 and lines 1-5, respectively) wherein said computer disc comprises an optical, magneto-optical or magnetic disc (column 15, lines 55-61).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

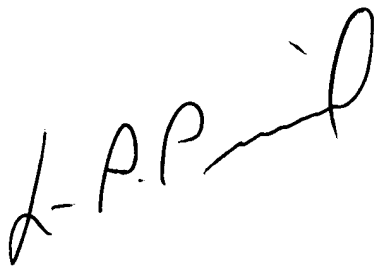
TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Tom Stevens whose telephone number is 571-272-3715, Monday-Friday (8:00 am- 4:30 pm) or contact Supervisor Mr. Leo Picard at (571) 272-3749. Central Fax number is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100.

July 12, 2005



THS

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